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EXAMINER
THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application N .

09/583,502

Applicant(s)

DAS, JYOTI

Examiner

Kandasamy Thangavelu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 12-19, 22, 25-31 and 34-36 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 11, 20, 21, 23, 24, 32 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-36 of the application have been examined.

Domestic Priority not Granted

2. This application contains a claim for the benefit of priority based on U.S. Provisional Application No. 60/137,233 filed on June 2, 1999. Provisional Application 60/137,233 has been reviewed and priority denied, because the Provisional Application 60/137,233 fails to satisfy the requirements of 35 U.S.C section 112, first paragraph, as described below:

The provisional application contains the User's Guide for the SolidWorks 99 software package. It does not describe the invention claimed in the current application. One of ordinary skill in the art would require undue experimentation to arrive at the material claimed in the invention from the SolidWorks 99 User's Guide. See 35 U.S.C 119 (e) (1).

Information Disclosure Statement

3. Acknowledgment is made of the information disclosure statements filed on October 23, 2000 together with copies of the patents. The patents have been considered in reviewing the claims.

Drawings

4. The drawings submitted on May 31, 2000 are accepted.

Duplicate Claims, Objection

5. Claim 24 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 12. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 26, 27 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 26 recites the limitation "The program apparatus of Claim 25" in Line 1 of the claim. There is insufficient antecedent basis for this limitation in the

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claim. Claim 25 refers to "A computer aided drawing system" and not a program apparatus.

Claim 27 recites the limitation "The system of Claim 26" in Line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Claim 25 refers to "The program apparatus of Claim 25" and not a system.

Claim 35 recites the limitation " The system of Claim 22" in Line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Claim 22 refers to "The program apparatus of Claim 13" and not a system.

Claim Interpretations

8. In Claim 26, the limitation "The program apparatus of Claim 25" in Line 1 of the claim, has been interpreted as "The computer aided drawing system of Claim 25".

In Claim 27, the limitation "The system of Claim 26" in Line 1 of the claim has been assumed to be correct, when Claim 26 is interpreted as above.

In Claim 35, the limitation "The system of Claim 22" in Line 1 of the claim has been interpreted as "The system of Claim 25".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

10. Claims 1-4, 7, 10, 12-16, 19, 22, 25-28, 31, 34 and 36 are rejected under 35

U.S.C. 102(e) as being anticipated by **Fujieda et al. (FU)** (U.S. Patent 6,557,002).

10.1 **FU** teaches Data management system for storing structural element data

management program. Specifically, as per Claim 1, **FU** teaches a computer implemented method for restructuring a design model generated by a computer aided design system (Fig. 1; CL1, L15-18); the method comprising:

receiving at a computer a command to restructure the design model, the design model comprising a first hierarchical data structure interrelating a plurality of components (Fig. 1, Item 14; Fig. 6, Item 61) and the command to restructure comprising a command to change a hierarchical relationship of a first subset of the plurality of components with respect to other ones of the plurality of components (Fig. 1, Item 14; Fig. 6, Item 61; CL3, L28-30);

in accordance with the command to restructure, generating a new hierarchical data structure comprising a new hierarchical relationship between the plurality of model components (Fig. 1, Item 14; Fig. 6, Item 61; Fig. 9, Item 61; Fig. 10; CL2, L67 to CL3, L2);

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determining other relationships between components in the first data structure hierarchy that are changed as a result of the command to restructure (Fig. 9; Fig. 10; CL3, L46-51); and

dynamically updating the other relationships to preserve the other relationships subsequent to the generation of the new hierarchical relationship (Fig. 9; Fig. 10; CL3, L54-63).

10.2 As per Claim 2, **FU** teaches the method of Claim 1. **FU** also teaches that the first hierarchical data structure comprises a plurality of parent-child relationships relating the plurality of components to a common root component, the parent-child relationships detailing a construction of the model (Fig. 6, Item 61; CL3, L28-30).

10.3 As per Claim 3, **FU** teaches the method of Claim 2. **FU** also teaches that generating the new hierarchical data structure comprises changing a hierarchical path between the first subset and the root component (Fig. 9, Item 61, LX-277B).

10.4 As per Claim 4, **FU** teaches the method of Claim 3. **FU** also teaches that the other ones of the plurality of components comprises a first other component (Fig. 9, Item 61, LX-277A);

the other relationships comprise a first other relationship between one of the first subset of components and the first other component (Fig. 9, Item 61, LX-277B to LX-277A); and

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the hierarchical path between the root component and the first other component is not changed as a result of the restructuring command (Fig. 9, Item 61, LX-277A).

10.5 As per Claim 7, **FU** teaches the method of Claim 4. **FU** also teaches that the first other relationship comprises an update relationship and dynamically updating the other relationships comprises updating data to maintain an updating relationship between the one of the first subset of components component and the first other component (Fig. 9, Item 61).

10.6 As per Claim 10, **FU** teaches the method of Claim 1. **FU** also teaches that generating the new hierarchical data structure comprises generating a component list identifying a component moving to a new location (Fig. 9, Items 61 and 62); and

updating the other relationships comprises generating a reference list identifying the other relationships that are changed (Fig. 9, Item 62).

10.7 As per Claim 12, **FU** teaches the method of Claim 1. **FU** also teaches that the first subset of components comprise a subassembly of the model (Fig. 6, Item 61, LX-277B).

10.8 As per Claims 13-16, 19, 22, 25-28, 31, 34 and 36, these are rejected based on the same reasoning as Claims 1-4, 7, 10 and 12, as shown above. Claims 13-16, 19, 22, 25-28, 31, 34 and 36 are computer program on a computer readable medium and computer

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aided drawing system claims reciting the same limitations as Claims 1-4, 7, 10 and 12, as taught throughout by **FU**.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 5, 6, 17, 18, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Fujieda et al. (FU)** (U.S. Patent 6,557,002) in view of **Altidis (AL)** (Solidworks 98Plus, Design News, April 1999).

13.1 As per Claim 5, **FU** teaches the method of Claim 4. **FU** does not expressly teach that the first other relationship comprises a mate relationship and dynamically updating

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the other relationships comprises updating first other relationship data to maintain a mating between the one of the subset of components and the first other components. **AL** teaches that the first other relationship comprises a mate relationship and dynamically updating the other relationships comprises updating first other relationship data to maintain a mating between the one of the subset of components and the first other components (Col 1, Para 3), as an assembly is put together by specifying ahead of time, how the features of two parts are aligned or mated (Col 1, Para 3). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **FU** with the method of **AL** that included the first other relationship comprising a mate relationship and dynamically updating the other relationships comprising updating first other relationship data to maintain a mating between the one of the subset of components and the first other components, as an assembly would be put together by specifying ahead of time, how the features of two parts are aligned or mated.

13.2 As per Claim 6, **FU** and **AL** teach the method of Claim 5. **FU** also teaches that prior to the restructure of the hierarchy, the first subset is a descendent of the first other components, and subsequent to the restructure, the first subset is not a descendent of the first other component (Fig. 6, Item 61, LX-277B and Fig. 9, Item 61, LX-277E).

13.3 As per Claims 17, 18, 29 and 30, these are rejected based on the same reasoning as Claims 5 and 6, as shown above. Claims 17, 18, 29 and 30 are computer program on a computer readable medium and computer aided drawing system claims reciting the same limitations as Claims 5 and 6, as taught throughout by **FU** and **AL**.

Allowable Subject Matter

14. Claims 8, 9, 11, 20, 21, 23, 32, 33 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to the Applicants' disclosure.

The following patents and papers are cited to further show the state of the art at the time of Applicants' invention with respect to automated restructuring of Computer aided design (CAD) hierarchical data structure.

1. Yasue, "Design information management system having a bulk data server ...", U.S. Patent 6,289,345, September 2001.
2. Ho et al., "Layout overlap detection with selective flattening ...", U.S. Patent 6,011,911, January 2000.
3. Mukouchi et al., "Apparatus and method for creating three-dimensional object model ...", U.S. Patent 6,104,403, August 2000.
4. Minami et al., "Apparatus for producing exploded view and animation of assembling ...", U.S. Patent 6,295,063, September 2001.


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5. Woyak et al, "Functionality and data integration of software modules through dynamic integration", Journal of Engineering design, Vol. 9, No. 2. 1998.
 6. Zhang et al., "The disposal to Face-based representation of design/manufacturing feature integration", ACM 1999.
 7. Ansaldi et al., "Geometric modeling of solid objects by using a face adjacency graph representation", ACM 1985.
16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7329.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
July 24, 2003


SAMUEL BRODA, ESQ.
PRIMARY EXAMINER